

Responses to Mass-Fatalities in the Aftermath of 2010 Haiti Earthquake

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ABSTRACT

The January 12, 2010, Haiti earthquake killed 222,517 people in a city, that featured about equal the number of fatalities in 12 countries after the 2004 tsunami. Therefore it is an important case study for mass fatalities management. The effective way of collecting, processing, and disposing of human remains is elusive. The way dead bodies are dealt with reflects how living are treated and respected. There is a dearth of literature on mass fatalities management. This report discusses the context of Haiti earthquake and findings based on seventeen interviews with DMORT team leader, morgue director, priests, funeral home representative, doctors, nonprofit representative, and local residents.

In Haiti, most of the cadavers were recovered by family members, neighbors, and the community. The bodies were littered in the streets of Port-au-Prince. There were mass burials by dumping bodies by bulldozers and dump trucks in trenches at Titanyen, by the Central National Equipment. Due to the unbearable stench of the decomposing remains, family members and others burnt the remains on site using gasoline. Due to huge number of bodies, even the thought of preservation might not have arisen. Most of the communications about the fatalities were by 'word of mouth'. Block-by-block, street neighborhood people could have been involved in identifying the bodies before disposition. Technology, including RFID chips use, is available for identification in mass death situations, although economics may override technology. The use of RFID chips implantation in the bodies for identification needs to be researched.

INTRODUCTION

Disasters resulting in mass fatalities are on the increase. Recent examples include the January 12, 2010, Haiti earthquake that killed 222,517 people (Director of Civil Protection 2010); the 2008 Cyclone Nargis that killed 138,366 people in Myanmar (EM-DAT 2010); the 2008 Sichuan earthquake that killed 87,476 people in China (EM-DAT 2010); the 2005 Kashmir earthquake that killed 73,338 people in Pakistan and 1,309 in India (EM-DAT 2010); and the 2004 Indian Ocean tsunami that resulted in the death of 223,492 people (The UN Office of the Special Envoy for Tsunami Recovery 2005).

Due to the aforementioned and other disasters, mass fatalities are an international contemporary issue. Although attention is often directed towards the provision of emergency relief for survivors in the immediate aftermath of an event, government officials, non-profit organizations, and citizens themselves are faced with the difficult task of dealing with hundreds or thousands of cadavers. Unfortunately, mass-fatality management (MFM) is not frequently or sufficiently addressed before or after disasters. One reason for limited discourse or research on MFM may be because talking about death is seen as a taboo (Bertman 1974, 334).

There are at least two major problems resulting from this ongoing neglect. First, and from a practical standpoint, the most effective way of collecting, processing and disposing of human remains continues to be elusive. Second, there is a lack of understanding about the beliefs of surviving family members and friends. "Religious matters are so sensitive that even unknowingly one may harm another" (Ekici, McEntire, and Afedzie 2009, 517). Cadavers therefore need to be treated in a way befitting the ritualistic and religious practices; otherwise, it may leave a Zeigarnik effect (Zeigarnik 1967) on the surviving family members and the community. For instance, if an unidentified body is cremated or buried without markings, it may foreclose the possibility of identification forever. According to Zeigarnik effect, failure to find closure after disasters can have major consequences (Zeigarnik 1967). The way dead bodies are dealt with reflects how the living are treated and respected. Mass mortalities following disasters have political implications, and sometimes have even led to the formation of new political systems (e.g., Bangladesh).

Those responding to mass fatalities need procedures to ensure a sense of closure for the next-of-kin, administrative efficacy in determining the identity of the dead, and information of culturally and religiously appropriate rituals. Unfortunately, there is a dearth of literature on MFM outside of the United States. Even within the US, MFM experience has been for less than 200 fatalities after a disaster, mostly following an airplane crash; except for 9/11 and Katrina.

The purpose of this Quick-Response Research Report is to contribute to the MFM literature by focusing on the response to the Haiti earthquake of January 12, 2010. This report presents the literature review, the research questions, theory and conceptualization, and discusses the context of Haiti earthquake. Next, the report describes the research method, and sample size and characteristics. The research findings are presented under the subheads of body recovery, preservation, communicating fatalities, identification, disposition, and general findings. The report

ends with discussions, and conclusion.

LITERATURE REVIEW

“A mass fatality incident is any situation where there are more bodies than can be handled using existing local resources” (McEntire 2007, 159). According to the literature, there are several elements of MFM. These include the recovery, transportation, preservation, identification of human remains and returning of cadavers to family members, and the disposition of unidentified remains (Oyola-Yemaiel and Gupta 2006). The research describing handling of bodies is limited and comparisons are available for western-world countries only (Blanshan 1977, Pine 1974, Quarantelli 1979). A criticism of MFM research is the inability to generalize findings to populations beyond western cultures (Fischer 1998).

What is widely recognized is that “No technical guidelines currently exist for managing mass fatalities following large natural disasters....Furthermore, no information is currently available about post-disaster management of the dead following previous large natural disasters....FM following natural disasters needs to be informed by further field research (Morgan et al. 2006). In addition, there are hardly any MFM studies in developing nations before the 2004 Tsunami. Gupta (2006, 2005a, 2005b), and Oyola-Yemaiel and Gupta (2006, 2005) have described handling of bodies after the 2004 tsunami in India and Sri Lanka. Perera (2006) indicates that the management of the deceased was exceptionally deficient in Sri Lanka following the tsunami. Gupta (Forthcoming) describes the handling of bodies after cyclone Aila in Bangladesh and India.

There is lack of literature about and understanding of dealing with, unidentified bodies in sudden, catastrophic mass mortalities. The widespread and deeply interwoven cultural beliefs and varied kinds of religious practices require research on the topic cross culturally, and across disciplines. The ways cadavers are handled have potentially serious mental, social, financial and legal consequences. Families pay respect and honor their lost relatives by suitable handling of cadavers. Identifying the dead and ritual burial is essential for grieving in many cultures. If the cadavers are not handled in religiously and culturally appropriate way, then it may create Zeigarnik effect and post-traumatic stress disorder among the surviving family and community members.

Identification of the bodies is important. In many cultures a woman cannot marry another person unless her husband is certified as dead (and not simply missing), and it creates social problem for the woman. Identification is also important from legal and financial point of view. Without the definite death certificate, the surviving family members may not be able to get any compensation from the government or insurance money. It may also create dispute in inheritance rights. Different countries have different laws to consider a missing person as dead. In India and many common law countries, including some states in US, seven years is the waiting period for a missing person to be legally declared as dead. Some states in US have this period as 3 or 4 years also.

RESEARCH QUESTIONS

This research explored the following research questions:

1. How were bodies removed from collapsed buildings?

2. Who moved bodies from their original location and to what locations?
3. What was the waiting period for the disposition of the unidentified bodies?
4. What records were kept, if any, of unidentified bodies before disposition?
5. Was public notice given about last rites?
6. What rituals were performed, if any? Were religious leaders present during last rites? If yes, of which religious faith(s)?
7. Were the unidentified bodies buried or cremated?
8. Is it possible that buried bodies could be exhumed for possible identification in future?

These questions generally explored how the bodies were recovered, moved, preserved, identified, and returned to the family members, and disposition of unidentified bodies. In addition, this study examined at the role of government, non-profit organizations, and citizens in this MFM case study.

THEORY AND CONCEPTUALIZATION

This research was informed by “emergent norms” and “emergent organizations” theoretical perspectives. Classic collective-behavior theory describes the process through which norms emerge to govern and direct human social and organizational responses in disaster situations. For instance, decision-making, communication and responses based on pressing needs and limited resources should be enumerated and studied for the benefit of other regions that may face similar problems. This is particularly important when cultural norms must be forfeited, modified, negotiated, or changed in the aftermath of a calamity (Phillips 1993). Studies also reveal instances where emergent organizations form spontaneously after disasters and positively address community needs (Kendra and Wachtendorf 2007).

These theoretical approaches are undoubtedly relevant to the study of MFM. As an example, cultural norms have presented challenges relating to the need to bury unidentified bodies. In the Haiti earthquake, collective-behavior theory would suggest that survivors may develop emergent norms to handle bodies. There have been mass burials by dumping bodies by bulldozers and dump trucks in trenches at Titanyen¹, Haiti, by the Central National Equipment(CNE)², a Haiti government organization. Due to the unbearable stench of the decomposing remains, family members and others cremated the remains on site using gasoline. However, these measures appear to be contrary to the Haitian religious practices – particularly voodoo activities – where last rites are performed elaborately. It would therefore appear that emergent norm and emergent organization theory are applicable to challenges of handling bodies in Haiti.

In addition, research after the Mexico City earthquake revealed that emergent organizations were salient in the recovery and disposition of the large number of bodies in that disaster (Poniatowska, 1995). Conflicting cultural norms are likely to have been presented to local populations, government, and survivors with a divergent set of challenges related to commonly accepted methods of disposing of their dead. For instance, research reveals that there is enormous

¹ Titanyen is about 15 km from Port-au-Prince, where a large flat uninhabited treeless stretch of land slightly away from the National Highway no. 1 and the hills was used for dumping the large number of bodies.

² CNE is a government agency having large fleet of earth moving equipment, bulldozers, front loading trucks, water tankers, etc.

pressure in society to hold individual funerals for the deceased (Blanshan and Quarantelli, 1981). Also, the Pan American Health Organization (PAHO) (2004) recommends avoidance of common graves or mass cremations in all circumstances, since it is a violation of the human rights of surviving family members. Spontaneous organizations may or may not be aware of these conflicting priorities in the immediate aftermath of a disaster.

CONTEXT OF HAITI EARTHQUAKE

On January 12, 2010, at 16:53 hrs., an earthquake of 7.0 magnitude on the Richter scale struck the capital city of Port-au-Prince. With an epicenter 25 km South-West of Port-au-Prince and shallow depth of 13 km (Blanpied 2010), it was the most violent earthquake in the area in a century. Due to improper construction and weak or non-existent building codes, the earthquake destroyed most buildings. The number of dead, as of February 21 is 222,517 (Director of Civil Protection 2010), excluding bodies buried or cremated by individuals or groups other than the CNE. As a result, there were bodies littering the streets of Port-au-Prince and they had to be dealt with by government agencies, and citizens. The disaster is consequently an important case study for MFM, particularly due to the huge number of deaths, which almost equals that from the 2004 tsunami.

Haiti has population of approximately 9 million, of which about 2 million were living in Port-au-Prince before the earthquake. The earthquake destroyed large number of buildings, including President's Palace and many hospitals. After the earthquake bodies were placed on the roads and sidewalks. Many buildings were in dangerous situation and people were living on roads, particularly after many aftershocks, some of which measured more than 5.0 on the Richter scale.

To understand the responses to mass fatalities in Haiti, we need to understand the context of Haiti. Haiti is one of the poorest countries of the world, and the poorest country in the Western hemisphere. Haiti's poor majority, 80 percent, lives within a budget of \$2 per day or less (Schuller 2008, 204). It is generally not known that the wealth is concentrated in the hands of a very privileged few in Haiti, the second most unequal country in the world (Jadotte 2006). Haiti ranked as the most corrupt country in 2005 according to the Transparency International in its "corruption perception index" (Schuller 2008). The extremes of inequality, poverty, and the corruption triangular pillar on which Haiti is standing, coupled with weak government, is the perfect recipe for the catastrophic disaster we have seen. Yet, none of UN or other international organizations, foreign government and private donors after the Haiti earthquake seems to face the challenge of these root causes of the disaster (Wisner et al. 2004).

RESEARCH METHOD

Michaels (2003, 41) defines Quick Response Research as the information collection phase occurring during or immediately after a damaging event. Data regarding mass fatalities responses were primarily collected through field research, observations, and interviews (Stallings 2007, Michaels 2003). This research was qualitative in design, using mixed-methods research for data collection. Media research, internet research, and document analysis were the other methods used.

Most of the fatalities from the earthquake occurred in Port-au-Prince; therefore, the

geographical area of research was restricted to only Port-au-Prince. The data collection began on January 12, 2010, the day the earthquake occurred. The data collection was done from media sources (Internet, TV, Newspapers, Blogs); published films, DVDs, books, and journal articles; people who are knowledgeable about Haiti; researchers who went to Haiti or were planning to go to Haiti; and other personal contacts.

Due to the catastrophic nature of the disaster and the exaggerated adverse living conditions portrayed in the media (which we realized only after going to Haiti), considerable research was done for logistic preparation in the field. The ever-changing cancelation of commercial flights made the research task even more challenging. Due to non-availability of commercial flights the research team could reach Haiti only on February 23, 2010. The field research was conducted till February 28, 2010. In our field research we had excellent support form a logistic professional and an interpreter.

SAMPLE SIZE AND CHARACTERISTICS

Apart from field observations, and taking digital photographs; seventeen interviews were conducted, including two audio taped interviews. The interview subjects were selected using snowball, non-random, non-probabilistic, purposive sampling method. The interview subjects were those who were: 1) knowledgeable about the cultural arena as it pertains to MFM, 2) willing to participate or talk to the researchers, and 3) representatives of a wide range of points of view (Rubin and Rubin 2005, 64).

The seventeen interview subjects could be classified in following way:

Disaster Mortuary Operational Response Team (DMORT) head	1
Morgue Director	1
Building subcontractor	1
Priest (Protestant, Voodoo ³)	2
Funeral Home people	2
Local resident (Titanyen, 2 Port-au-Prince)	3
Nonprofit representative	3
Doctors (2 internal medicine, Forensic pathologist, Neurosurgeon)	4

DMORT is a federal-level response team designed to provide mortuary assistance in the case of a mass-fatality incident or cemetery related incident. DMORT has ten regionally located multidisciplinary teams. DMORT has grown from its humble beginnings in the early 1990's to the current group of over 1200 trained and capable volunteers who respond at a moment's notice to assist those in need. It was the first time that a DMORT team was deployed outside USA (DMORT 2010). DMORTs are composed of private citizens, each with a particular field of expertise, who are activated in the event of a disaster (Department of Health and Human Services 2010). The DMORT operations head in Haiti we interviewed is medical professional (psychiatry) by academic background. One of the local residents we interviewed was from near Titanyen. Two of his brothers died due to

³ A religion practiced throughout Caribbean countries, especially Haiti, that is a combination of Roman Catholic rituals and animistic beliefs, involving magic and communication with ancestors.

earthquake. We interviewed a female in whose home a dead body of a visitor was still lying. Some interview subjects have given permission to disclose their identity in the publications, and they are identified in this paper, as it is relevant.

RESEARCH FINDINGS

The research findings are presented based on the classification of body recovery, body preservation, communicating fatalities, identification, and disposal of bodies. Of course, some of the findings may overlap these categories; because of that they have been mentioned in the dominant theme. Other findings which cannot be placed in one of these typologies are stated in general findings. The research questions are addressed within the appropriate subhead in the findings section.

Body recovery

One of the persons we interviewed at Titanyen had lost two of his brothers to the earthquake. He said he personally counted 200 bodies being thrown from the CNE trucks. According to him no record of buried bodies was kept. The building subcontractor we interviewed said that at the time of earthquake a function was going on in this demolished church. Four people died on the spot. Two definite dead bodies are below the rubble and possibly one more. We are removing the rubble to recover the bodies.

Most of the cadavers were recovered by family members, neighbors, and the community. Many international search and rescue teams reached Haiti and searched for people and bodies trapped in collapsed buildings. However, their efforts were concentrated in locating survivors or deceased of their own countries. Seven weeks after the earthquake, the research team saw a body lying in a collapsed building adjoining main road of Port-au-Prince. One doctor we interviewed that day said that while coming to work on the main road he saw a body dangling from the building and skull lying nearby. We had actually come to see that dangling body; instead we found other body. Most subjects said that there were many dead bodies still in the collapsed buildings underneath the rubble.

Many interview subjects said that after the earthquake family members were looking for loved ones. Family members and friends made attempts to locate the missing person by visiting hospitals, police stations, and making cell phone calls to the person's number. If there was no response from the cell phone of the missing person in 2/3 days, the person was presumed to be dead.

One of the doctors we interviewed said that CNE first removed the bodies from the main streets, then business places, and lastly from the houses. She said it took about five days for CNE to remove bodies from inside and around the General Hospital. According to her no death certificates were issued, bodies were taken by CNE trucks, and mass buried, without any rituals being performed.

Body preservation

Pierre Yves Jovin, Morgue Director, General Hospital, Port-au-Prince came for work at 8 AM on January 13. Describing the situation he said:

I found the yard and the parking area overloaded with the cadavers. When I came into the office to work there were 800 tags with the numbers for the bodies. All the tags were used. And the Director gave us 500 more tags and they were also used. Afterwards I have to get 900 more tags and all 2,200 tags were used by 3 PM. When he saw the atmosphere and that bodies were keep coming the office was closed. The bodies were piling up. At around 5 PM government passed rule saying that all the bodies have to be commune disposed (mass buried) and taken to Titanyen for burial by the Central National Equipment. Ever since 13th January there have been so many cadavers that we have not registered them. It was daily war with so many bodies coming. We started registering bodies from 21st January again. Our record adds up to 12,700 cadavers. The morgue here was considered to be of the lowest category before the earthquake. The techniques we were using were archaic.

The Haiti earthquake resulted in such a large number of fatalities that it seems even the thought of body preservation might not have arisen. The morgue at the General Hospital, Port-au-Prince had capacity of keeping about 3,000 bodies. Most of the cadavers were in this morgue at the time of our field visit were those types which would be there in any normal day (and not due to earthquake). By and large the General Hospital morgue was not used for the earthquake dead. Only the bodies of a few foreign nationals were preserved in the morgue, mainly of Canadians.

Communicating fatalities

Most of the communications about the fatalities were by 'word of mouth'. Internet website was also used in Haiti. Compared to the 222,517 dead (that is government figures and excludes bodies which were not disposed by the CNE. Most subjects we interviewed said the number of dead is much larger, Rodriguez (2010) estimated that the number of dead would not less than 300,000. Internet was used for communicating deaths of probably few thousand. Most of the government buildings were collapsed. There appear to be no communication from the government communicating about the fatalities to the community. It was all private effort of the citizens. Immediately after the earthquake the cell phones were also not working. The roads were also blocked due to debris of falling building. People resorted to walking for communicating about the deaths to their near and dear ones.

Identification

No records of bodies that were brought to the General Hospital between January 13 and 20 were kept. Pierre Yves Jovin said:

Even in the mass grave situation bodies should have been tagged and registered and a record kept, so that later on in the future from registration number they could know the location where the body was buried. An attempt for body identification could be made by future investigation.

No effort, whatsoever, was made by government to identify the dead, except foreigners. The facilities for forensic identification, like DNA testing, dental records, and finger printing were not available. Block by block, and street neighborhood people could have been involved in identifying the bodies before disposition (Rodrigue 2010).

The first DMORT deployment in its history outside USA occurred when DMORT III team was deployed in Port-au-Prince on February 12, 2010. In place of standard 50 person team, in Port-au-Prince a 25 member team was deployed. The mission of the team was to find out and recover deceased Americans who perished in the earthquake. Till Feb. 25, 35 bodies of Americans were recovered by the DMORT team. DMORT expected not to recover more than 15 additional bodies. Thirty-two bodies were positively identified, and they were working on identification of 3 bodies. Dental records were the main source of ID, but finger prints also revealed IDs in a few cases. Technology is available for identification in mass death situations, although economics may override technology. In Katrina RFID chips were implanted for identification of bodies (Kauffman 2010).

Disposition

The earthquake shattered Port-au-Prince. People died due to building collapses. Most people removed bodies from buildings and kept on the roads, sidewalks, and open places. Some people took bodies to the General Hospital and kept in parking lots, and all around wherever there was open space inside or outside the General Hospital.

The CNE deployed trucks, bulldozers, and other earth moving equipment for collecting the bodies and taking them to Titanyen for dumping them. CNE would use bulldozers to create long about 3 meter wide at top, 2 meter deep tapering trench. The trucks would bring the dead bodies without any effort for identification and dump them in the trenches. CNE equipment would then cover the trenches with the mud. This process was started from January 13 and was going on till the field visit of the research team. The process was likely to continue after our field visit.

During the course of our field research we went to Titanyen number of times. During our first visit we saw dead bodies in the open trenches, and also among the rubble. During our second visit on the same day we saw a totally different scenario. In the intervening period of our visit, CNE equipment and workers came and covered the bodies. At other time we saw more bodies with the rubble lying there. It appears that apart from not making any effort for identification of the dead, no effort was made for performing any rituals. One common memorial service was performed at Titanyen one month after the earthquake in the presence of the President of Haiti, and catholic and voodoo priests. The voodoo priest we met said he was part of the memorial service arranged by the government after a month of the earthquake. Public notice of this memorial service was given by posters, handouts, and on the radio. At the time of our visit the holy cross that has been placed during the memorial service, along with the plastic flowers, were still there. Our interviewee voodoo priest also performed rituals at Titanyen 8 and 15 days after the earthquake, along with some others. The performance of memorial service after 8 and 15 days was also collaborated by a local Titanyen doctor we interviewed.

Due to unbearable stench of the decomposing bodies, the local people doused bodies in the gasoline and burnt those on site. The burning onsite of bodies cannot be considered as cremation (Rodriguez 2010). There is no possibility of exhumation of bodies buried at Titanyen for identification in future. Some bodies of the earthquake victims were brought to the funeral home owner and administrator we interviewed, but they did not accept the earthquake victims.

General

Some interviewee subjects said that they had been with a person before the earthquake, and afterwards those persons were simply gone. The earthquake has changed their perspective of life. They have become more reflective, more praying to God, and do more meditation. Since they survived, they feel closer to the God, and asking God for direction. Many said that now material things are not as important as they were thinking earlier. People and life is more important.

One of the Port-au-Prince residents we interviewed said that on January 13 at 6:00 AM he went out to see the city. He saw everybody was running like crazy. He couldn't believe the falling of Presidential Palace. He said while walking he stepped on 1,000 bodies. He saw a collapsed building which had 300 people inside. There was total destruction. In his estimate more than 400,000 people would have died. His cousin brother was working as the President's bodyguard, and his body must be rotting inside the President's Palace.

Except one, none of the interview subjects criticized government for the way it managed mass fatalities. According to one subject it was disgusting the way with which bodies were dealt. Others said that the government was overwhelmed, and it was not having the resources to tackle such a situation. The doctors we met, although not criticizing the government, said that attempts should have been made to identify the bodies by various methods. Most of the interviewees also said that disposition of the bodies should have been done with respect and performing rituals.

DISCUSSIONS

Benefits of the research

We do not know much about mass mortality management, and we particularly do not know much about how other countries manage mass mortality incidents. Haiti earthquake offered unique opportunity for research due to the absolute chaotic situation and catastrophic nature of the disaster.

Limitations

Despite the best of our efforts we could not meet anybody from CNE, which was responsible for disposition of bodies after the earthquake. We were also unable to meet any other Haitian Government official, or representatives of World Health Organization or Pan America Health Organization or other UN Cluster organization representatives. As the findings are based on a Quick Response Research case study they may not be generalization in other culturally or otherwise diverse situations.

CONCLUSION

Haiti earthquake with 222,517 deaths in Port-au-Prince is a disaster of gigantic proportions, with largest number of disaster deaths in a city in modern times. The government was unable to meet the challenge of MFM. Dead bodies were simply bulldozed and mass buried without any efforts for identification or performing last rites. Citizens doused decomposing bodies in gasoline and burnt on site. This way of disposition of bodies was not noticed in any disaster in recent times. This is likely to have psychological affect on some of the surviving family members. Further research is needed to follow up on prior data collection in Haiti with additional interviews to assess findings on disposition of unidentified bodies for cross-cultural analysis, and learning how to manage such situations in future. The use of RFID chips implantation in the bodies for identification needs to be researched.

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DISCLAIMER

The views expressed in this report are of the author, and not of the University of North Texas; Natural Hazard Center, University of Colorado; or National Science Foundation.

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